

(12) **United States Patent**
Peak

(10) **Patent No.:** **US 9,638,303 B2**
(45) **Date of Patent:** **May 2, 2017**

(54) **DOUBLE DISCONNECT FRONT DIFFERENTIAL**

(56) **References Cited**

U.S. PATENT DOCUMENTS

(71) Applicant: **GM GLOBAL TECHNOLOGY OPERATIONS LLC**, Detroit, MI (US)

2,913,929 A * 11/1959 Anderson B60K 17/352 180/247

(72) Inventor: **Jess R. Peak**, Brighton, MI (US)

4,625,584 A * 12/1986 Onodera B60K 17/352 180/247

(73) Assignee: **GM GLOBAL TECHNOLOGY OPERATIONS LLC**, Detroit, MI (US)

5,996,720 A * 12/1999 Hunt B60K 23/08 180/247

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 15 days.

2003/0019672 A1* 1/2003 Borgen B60K 23/08 180/24.1

2003/0047403 A1* 3/2003 Borgen B60K 17/34 192/50

* cited by examiner

Primary Examiner — Justin Holmes

Assistant Examiner — Timothy M Hannon

(74) Attorney, Agent, or Firm — Cantor Colburn LLP

(21) Appl. No.: **14/645,550**

(22) Filed: **Mar. 12, 2015**

(57) **ABSTRACT**

(65) **Prior Publication Data**

US 2016/0265639 A1 Sep. 15, 2016

A front differential double disconnect includes a front differential having a first side gear and a second side gear, a first shaft having a first gear configured to selectively engage the first side gear, a second shaft having a second gear, and a third shaft disposed between the first shaft and the second shaft. The third shaft includes a third gear configured to engage the second side gear and selectively engage the second gear. The first shaft is shiftable between a first position where the first gear does not engage the first side gear, and a second position where the first gear meshingly engages the first side gear to transmit rotational movement therebetween.

(51) **Int. Cl.**
F16H 48/08 (2006.01)
B60K 23/08 (2006.01)

(52) **U.S. Cl.**
CPC **F16H 48/08** (2013.01); **B60K 23/08** (2013.01); **F16H 2048/082** (2013.01)

(58) **Field of Classification Search**
USPC 475/220
See application file for complete search history.

19 Claims, 3 Drawing Sheets

